

FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS
Unacceptable Substitutes

End-use	Substitute	Decision	Comments
Halon 1211 Streaming Agents.	[CFC-11]	Unacceptable	This agent has been suggested for use on large outdoor fires for which non-ozone depleting alternatives are currently used.

[59 FR 13147, Mar. 18, 1994, as amended at 67 FR 4200, Jan. 29, 2002]

APPENDIX B TO SUBPART G OF PART 82—SUBSTITUTES SUBJECT TO USE
RESTRICTIONS AND UNACCEPTABLE SUBSTITUTES

REFRIGERANTS—ACCEPTABLE SUBJECT TO USE CONDITIONS

Application	Substitute	Decision	Conditions	Comments
CFC-12 Automobile Motor Vehicle Air Conditioning (Retrofit and New Equipment/NIKS).	HFC-134a, R-401C, HCFC Blend Beta.	Acceptable	—must be used with unique fittings. —must be used with detailed labels. —all CFC-12 must be removed from the system prior to retrofitting. Refer to the text for a full description.	EPA is concerned that the existence of several substitutes in this end-use may increase the likelihood of significant refrigerant cross-contamination and potential failure of both air conditioning systems and recovery/recycling equipment. For the purposes of this rule, no distinction is made between “retrofit” and “drop-in” refrigerants; retrofitting a car to use a new refrigerant includes all procedures that result in the air conditioning system using a new refrigerant.
CFC-12 Automobile Motor Vehicle Air Conditioning (New equipment only).	R-152a as a substitute for CFC-12.	Acceptable subject to use conditions.	Engineering strategies and/or devices shall be incorporated into the system such that foreseeable leaks into the passenger compartment do not result in R-152a concentrations of 3.7% v/v or above in any part of the free space ¹ inside the passenger compartment for more than 15 seconds when the car ignition is on. Manufacturers must adhere to all the safety requirements listed in the Society of Automotive Engineers (SAE) Standard J639, including unique fittings and a flammable refrigerant warning label as well as SAE Standard J2773.	Additional training for service technicians recommended. Manufacturers should conduct and keep on file failure mode and Effect Analysis (FMEA) on the MVAC as stated in SAE J1739.

REFRIGERANTS—ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

Application	Substitute	Decision	Conditions	Comments
CFC-12 Automobile Motor Vehicle Air Conditioning (New equipment in passenger cars and light-duty trucks only).	HFO-1234yf as a substitute for CFC-12.	Acceptable subject to use conditions.	Manufacturers must adhere to all of the safety requirements listed in the Society of Automotive Engineers (SAE) Standard J639 (adopted 2011), including requirements for: unique fittings, flammable refrigerant warning label, high-pressure compressor cut-off switch and pressure relief devices. For connections with refrigerant containers for use in professional servicing (that is, service for consideration, consistent with subpart B to 40 CFR part 82), use fittings consistent with SAE J2644 (revised October 2011). Manufacturers must conduct Failure Mode and Effect Analysis (FMEA) as provided in SAE J1739 (adopted 2009). Manufacturers must keep the FMEA on file for at least three years from the date of creation.	Additional training for service technicians recommended. Observe requirements of Significant New Use Rule at 40 CFR 721.10182. HFO-1234yf is also known as 2,3,3,3-tetrafluoro-prop-1-ene (CAS No 754-12-1). Refrigerant containers of HFO-1234yf for use in professional servicing are from 5 lbs (2.3 L) to 50 lbs (23 L) in size. Requirements for handling, storage, and transportation of compressed gases apply to this refrigerant, such as regulations of the Occupational Safety and Health Administration at 29 CFR 1910.101 and the Department of Transportation's requirements at 49 CFR 171-179. Requirements for handling, storage, and transportation of compressed gases apply to this refrigerant, such as regulations of the Occupational Safety and Health Administration at 29 CFR 1910.101 and the Department of Transportation's requirements at 49 CFR 171-179.

¹Free space is defined as the space inside the passenger compartment excluding the space enclosed by the ducting in the HVAC module.

NOTE: The use conditions in this appendix contain references to certain standards from SAE International. The standards are incorporated by reference and the referenced sections are made part of the regulations in part 82:

1. SAE J639. Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems. Revised February 2011. SAE International.

2. SAE J1739 JAN2009. Potential Failure Mode and Effects Analysis in Design (Design FMEA), Potential Failure Mode and Effects Analysis in Manufacturing and Assembly Processes (Process FMEA). Revised January 2009. SAE International.

3. SAE J2844 OCT2011. R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements for Use in Mobile Air-Conditioning Systems. Revised October 2011. SAE International.

The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from SAE Customer Service, 400 Commonwealth Drive, Warrendale, PA 15096-0001 USA; email: CustomerService@sae.org; Telephone: 1-877-606-7323 (U.S. and Canada only) or 1-724-776-4970 (outside the U.S. and Canada); Internet address: <http://store.sae.org/dlabout.htm>. You may inspect a copy at U.S. EPA's Air Docket; EPA West Building, Room 3334; 1301 Constitution Ave. NW.; Washington, DC or at the National Archives and Records Administration (NARA). For questions regarding access to these standards, the telephone number of EPA's Air Docket is 202-566-1742. For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

REFRIGERANTS—ACCEPTABLE SUBJECT TO NARROWED USE LIMITS

End-use	Substitute	Decision	Comments
CFC-11, CFC-12, CFC-113, CFC-114, CFC-115 Non-Mechanical Heat Transfer, New.	C ₃ F ₈ , C ₄ F ₁₀ , C ₅ F ₁₂ , C ₅ F ₁₁ NO, C ₆ F ₁₄ , C ₆ F ₁₃ NO, C ₇ F ₁₆ , C ₇ F ₁₅ NO, C ₈ F ₁₈ , C ₈ F ₁₆ O, and C ₉ F ₂₁ N.	Acceptable only where no other alternatives are technically feasible due to safety or performance requirements.	Users must observe the limitations on PFC acceptability by determining that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. EPA strongly recommends recovery and recycling of these substitutes.

REFRIGERANTS—UNACCEPTABLE SUBSTITUTES

End-use	Substitute	Decision	Comments
CFC-11, CFC-12, CFC-113, CFC-114, R-500 Centrifugal Chillers (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 Reciprocating Chillers (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-11, CFC-12, R-502 Industrial Process Refrigeration (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
CFC-12, R-502 Ice Skating Rinks (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 Cold Storage Warehouses (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500, R-502 Refrigerated Transport (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

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REFRIGERANTS—UNACCEPTABLE SUBSTITUTES—Continued

End-use	Substitute	Decision	Comments
CFC-12, R-502 Retail Food Refrigeration (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 Commercial Ice Machines (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 Vending Machines (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 Water Coolers (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 Household Refrigerators (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 Household Freezers (Retrofit and New Equipment/NIKs).	R-403B	Unacceptable	R-403B contains R-218, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 Residential Dehumidifiers (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 Motor Vehicle Air Conditioners (Retrofit and New Equipment/NIKs).	R-405A	Unacceptable	R-405A contains R-c318, a PFC, which has an extremely high GWP and lifetime. Other substitutes exist which do not contain PFCs.
	Hydrocarbon Blend B	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

REFRIGERANTS—UNACCEPTABLE SUBSTITUTES—Continued

End-use	Substitute	Decision	Comments
	Flammable Substitutes, other than R-152a or HFO-1234yf in new equipment.	Unacceptable	The risks associated with using flammable substitutes (except R-152a and HFO-1234yf) in this end-use have not been addressed by a risk assessment. R-152a and HFO-1234yf may be used in new equipment with the use conditions in appendix B to this subpart.

SOLVENT CLEANING SECTOR—ACCEPTABLE SUBJECT TO USE CONDITIONS SUBSTITUTES

Application	Substitute	Decision	Conditions	Comments
Electronics Cleaning w/CFC-113, MCF.	HCFC-225 ca/cb	Acceptable	Subject to the company set exposure limit of 25 ppm of the -ca isomer.	HCFC-225 ca/cb blend is offered as a 45%-ca/55%-cb blend. The company set exposure limit of the -ca isomer is 25 ppm. The company set exposure limit of the -cb isomer is 250 ppm. It is the Agency's opinion that with the low emission cold cleaning and vapor degreasing equipment designed for this use, the 25 ppm limit of the HCFC-225 ca isomer can be met. The company is submitting further exposure monitoring data.
Precision Cleaning w/ CFC-113, MCF.	HCFC-225 ca/cb	Acceptable	Subject to the company set exposure limit of 25 ppm of the -ca isomer.	HCFC-225 ca/cb blend is offered as a 45%-ca/55%-cb blend. The company set exposure limit of the -ca isomer is 25 ppm. The company set exposure limit of the -cb isomer is 250 ppm. It is the Agency's opinion that with the low emission cold cleaning and vapor degreasing equipment designed for this use, the 25 ppm limit of the HCFC-225 ca isomer can be met. The company is submitting further exposure monitoring data.

SOLVENT CLEANING SECTOR—UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
Metals cleaning w/CFC-113 ..	Dibromomethane	Unacceptable	High ODP; other alternatives exist.
Metals cleaning w/MCF	Dibromomethane	Unacceptable	High ODP; other alternatives exist.
Electronics cleaning w/CFC-113.	Dibromomethane	Unacceptable	High ODP; other alternatives exist.
Electronics cleaning w/MCF ..	Dibromomethane	Unacceptable	High ODP; other alternatives exist.
Precision cleaning w/CFC-113.	Dibromomethane	Unacceptable	High ODP; other alternatives exist.
Precision cleaning w/MCF	Dibromomethane	Unacceptable	High ODP; other alternatives exist.

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FIRE SUPPRESSION AND EXPLOSION PROTECTION—ACCEPTABLE SUBJECT TO USE CONDITIONS:
TOTAL FLOODING AGENTS

Application	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flooding Agents.	Inert Gas/Powdered Aerosol Blend.	Acceptable as a Halon 1301 substitute in normally unoccupied areas.	In areas where personnel could possibly be present, as in a cargo area, EPA requires that the employer shall provide a pre-discharge employee alarm capable of being perceived above ambient light or noise levels for alerting employees before system discharge. The pre-discharge alarm shall provide employees time to safely exit the discharge area prior to system discharge.	The manufacturer's SNAP application requested listing for use in unoccupied areas only. See additional comment 2.

Additional Comments

1—Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code. You should use clean agents in accordance with the safety guidelines in the latest edition of the NFPA 2001 Standard for Clean Agent Fire Extinguishing Systems.
2—Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must enter/reenter the area.
3—Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4—The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

FIRE SUPPRESSION AND EXPLOSION PROTECTION—ACCEPTABLE SUBJECT TO NARROWED USE
LIMITS: TOTAL FLOODING AGENTS

End-use	Substitute	Decision	Conditions	Further information
Total flooding ...	Sulfurhexafluoride (SF ₆).	Acceptable subject to narrowed use in limits.	May be used as a discharge test agent in military uses and in civilian aircraft uses only.	This agent has an atmospheric lifetime greater than 1,000 years, with an estimated 100-year, 500-year, and 1,000-year GWP of 16,100, 26,110 and 32,803 respectively. Users should limit testing only to that which is essential to meet safety or performance requirements. This agent is only used to test new Halon 1301 systems. See additional comments 1, 2, 3, 4, 5.
Total flooding ...	CF ₃ I	Acceptable subject to narrowed use limits.	Use only in normally unoccupied areas.	Use of this agent should be in accordance with the safety guidelines in the latest edition of the NFPA 2001 Standard for Clean Agent Fire Extinguishing Systems. Manufacturer has not applied for listing for use in normally occupied areas. Preliminary cardiosensitization data indicates that this agent would not be suitable for use in normally occupied areas. See additional comments 1, 2, 3, 4, 5.

Additional comments:

1—Must conform with relevant OSHA requirements, including 29 CFR 1910, Subpart L, Sections 1910.160 and 1910.162.
2—Per OSHA requirements, protective gear (SCBA) should be available in the event personnel should reenter the area.
3—Discharge testing should be strictly limited to that which is essential to meet safety or performance requirements.
4—The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.
5—EPA has no intention of duplicating or displacing OSHA coverage related to the use of personal protective equipment (e.g., respiratory protection), fire protection, hazard communication, worker training or any other occupational safety and health standard with respect to halon substitutes.

FIRE SUPPRESSION AND EXPLOSION PROTECTION—UNACCEPTABLE SUBSTITUTES

Application	Substitute	Decision	Comments
Halon 1301 Total Flooding Agents.	HFC-32	Unacceptable	Data indicate that HFC-32 is flammable and therefore is not suitable as a halon substitute.

[60 FR 31103, June 13, 1995, as amended at 67 FR 4200, Jan. 29, 2002; 73 FR 33310, June 12, 2008; 76 FR 17519, Mar. 29, 2011; 77 FR 17350, Mar. 26, 2012]

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40 CFR Ch. I (7–1–12 Edition)

EFFECTIVE DATE NOTE: At 77 FR 33330, June 6, 2012, appendix B to subpart G of part 82 was amended by adding an entry to the end of the table for “Refrigerants-Acceptable

Subject to Use Conditions,” and by revising footnotes 1, 2, and 3, effective Aug. 6, 2012. For the convenience of the user, the added and revised text is set forth as follows:

APPENDIX B TO SUBPART G OF PART 82—SUBSTITUTES SUBJECT TO USE RESTRICTIONS AND UNACCEPTABLE SUBSTITUTES

REFRIGERANTS-ACCEPTABLE SUBJECT TO USE CONDITIONS

Application	Substitute	Decision	Conditions	Comments
* CFC–12 Motor Vehicle Air Conditioning (New equipment only).	* Carbon dioxide (CO ₂) as a substitute for CFC–12.	* Acceptable subject to use conditions.	* Engineering strategies and/or mitigation devices shall be incorporated such that in the event of refrigerant leaks, the resulting CO ₂ concentrations do not exceed: The short term exposure level (STEL) of 3% or 30,000 ppm averaged over 15 minutes in the passenger free space ¹ ; and; The ceiling limit of 4% or 40,000 ppm in the passenger breathing zone. ² Vehicle manufacturers must keep records of the tests performed for a minimum period of three years demonstrating that CO ₂ refrigerant levels do not exceed the STEL of 3% averaged over 15 minutes in the passenger free space, and the ceiling limit of 4% in the breathing zone. The use of CO ₂ in MVAC systems must adhere to the standard conditions identified in SAE Standard J639 (2011 version) including: Installation of a high pressure system warning label; Installation of a compressor cut-off switch; and Use of unique fittings with: Outside diameter of 16.6 +0/–0.2 mm (0.6535 +0/–0.0078 inches) for the MVAC low-side; Outside diameter of 18.1 +0/–0.2 mm (0.7126 +0/–0.0078 inches) for the MVAC high-side; and Outside diameter of 20.955 +0/–0.127 mm (0.825 +0/–0.005 inches) and right-hand thread direction for CO ₂ refrigerant service containers. ³	* Additional training for service technicians is recommended. In designing risk mitigation strategies and/or devices, manufacturers should factor in background CO ₂ concentrations in the passenger cabin potentially contributed from normal respiration by the maximum number of vehicle occupants. Use of the standards SAE J1052, SAE J2772, and SAE J2773 is recommended as additional reference. Manufacturers should conduct and keep on file Potential Failure Mode and Effects Analysis in Design [Design FMEA], Potential Failure Mode and Effect Analysis in Manufacturing and Assembly Process [Process FMEA] on the MVAC as stated in SAE J1739.

¹Free space is defined as the space inside the passenger compartment excluding the space enclosed by the ducting in the HVAC module.

²Area inside the passenger compartment where the driver's and passengers' heads are located during a normal sitting position. Refer to SAE J1052 for information on determining passenger head position.

³The refrigerant service containers fitting requirement applies only to refrigerant service containers used during servicing of the MVAC, in accordance with the provisions established for MVAC servicing under 40 CFR part 82, subpart B.

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APPENDIX C TO SUBPART G OF PART 82—
SUBSTITUTES SUBJECT TO USE RE-
STRICTIONS AND UNACCEPTABLE SUB-
STITUTES LISTED IN THE MAY 22, 1996
FINAL RULE, EFFECTIVE JUNE 21,
1996

REFRIGERATION AND AIR CONDITIONING SEC-
TOR—ACCEPTABLE SUBJECT TO USE CONDI-
TIONS

HCFC Blend Delta and Blend Zeta are ac-
ceptable subject to the following conditions
when used to retrofit a CFC-12 motor vehicle
air conditioning system:

1. Each refrigerant may only be used with
a set of fittings that is unique to that refrig-
erant. These fittings (male or female, as ap-
propriate) must be used with all containers
of the refrigerant, on can taps, on recovery,
recycling, and charging equipment, and on
all air conditioning system service ports.
These fittings must be designed to mechan-
ically prevent cross-charging with another re-
frigerant. A refrigerant may only be used
with the fittings and can taps specifically in-
tended for that refrigerant. Using an adapter
or deliberately modifying a fitting to use a
different refrigerant will be a violation of
this use condition. In addition, fittings shall
meet the following criteria, derived from So-
ciety of Automotive Engineers (SAE) stand-
ards and recommended practices:

a. When existing CFC-12 service ports are
to be retrofitted, conversion assemblies shall
attach to the CFC-12 fitting with a thread
lock adhesive and/or a separate mechanical
latching mechanism in a manner that per-
manently prevents the assembly from being
removed.

b. All conversion assemblies and new serv-
ice ports must satisfy the vibration testing
requirements of sections 3.2.1 or 3.2.2 of SAE
J1660, as applicable, excluding references to
SAE J639 and SAE J2064, which are specific
to HFC-134a.

c. In order to prevent discharge of refrig-
erant to the atmosphere, systems shall have
a device to limit compressor operation be-
fore the pressure relief device will vent re-

frigerant. This requirement is waived for
systems that do not feature such a pressure
relief device.

d. All CFC-12 service ports not retrofitted
with conversion assemblies shall be rendered
permanently incompatible for use with CFC-
12 related service equipment by fitting with
a device attached with a thread lock adhe-
sive and/or a separate mechanical latching
mechanism in a manner that prevents the
device from being removed.

2. When a retrofit is performed, a label
must be used as follows:

a. The person conducting the retrofit must
apply a label to the air conditioning system
in the engine compartment that contains the
following information:

i. The name and address of the technician
and the company performing the retrofit.

ii. The date of the retrofit.

iii. The trade name, charge amount, and,
when applicable, the ASHRAE refrigerant
numerical designation of the refrigerant.

iv. The type, manufacturer, and amount of
lubricant used.

v. If the refrigerant is or contains an
ozone-depleting substance, the phrase "ozone
depleter."

vi. If the refrigerant displays flammability
limits as measured according to ASTM E681,
the statement "This refrigerant is FLAM-
MABLE. Take appropriate precautions."

b. This label must be large enough to be
easily read and must be permanent.

c. The background color must be unique to
the refrigerant.

d. The label must be affixed to the system
over information related to the previous re-
frigerant, in a location not normally re-
placed during vehicle repair.

e. Information on the previous refrigerant
that cannot be covered by the new label
must be permanently rendered unreadable.

3. No substitute refrigerant may be used to
"top-off" a system that uses another refrig-
erant. The original refrigerant must be re-
covered in accordance with regulations
issued under section 609 of the CAA prior to
charging with a substitute.

SOLVENT CLEANING SECTOR—PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS SUBSTITUTES

Application	Substitute	Decision	Conditions	Comments
Metals Cleaning with CFC-113, MCF and HCFC- 141b.	Monochlorotoluen- es and benzotrifluorides.	Acceptable	Subject to a 50 ppm workplace standard for monochlorotoluenes and a 25 ppm standard for benzotrifluorides.	The workplace standard for monochlorotoluenes is based on an OSHA PEL of 50 ppm for orthochlorotoluene. The workplace standard for benzotrifluorides is based on a recent toxicology study.